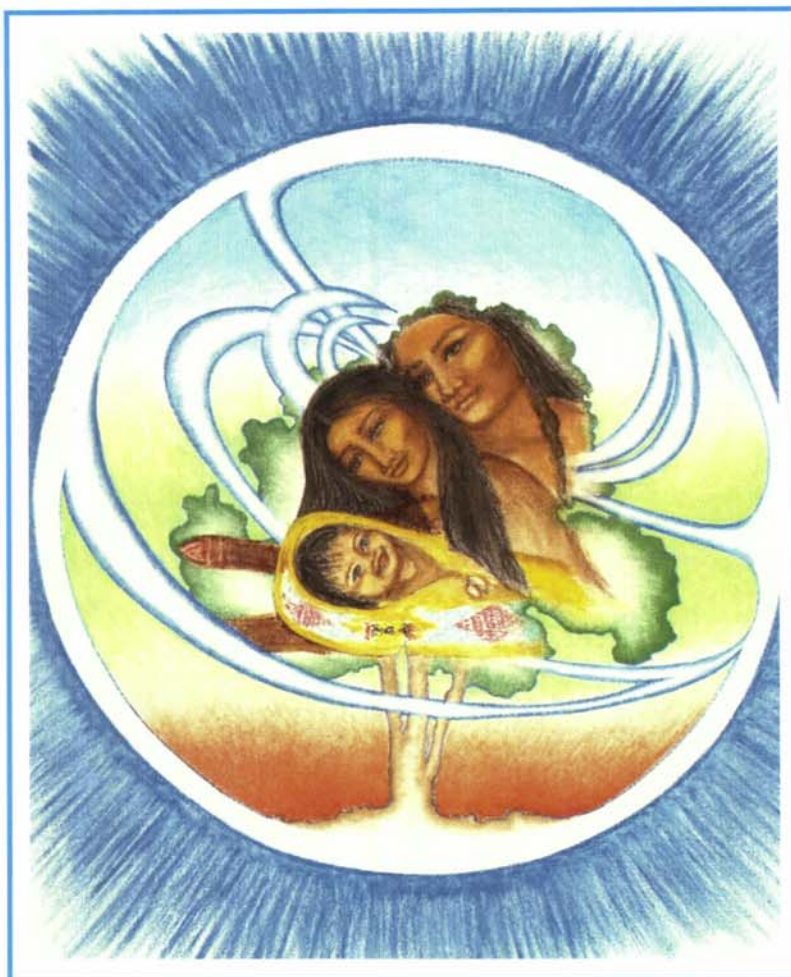


# **“Mi Ćinca kin towani ewaktonji kte śni”** ***“I will never forget my child”***

**Results of the Aberdeen Area Infant Mortality Study**



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**DEPARTMENT OF HEALTH & HUMAN SERVICES**

**CDC**  
CENTERS FOR DISEASE CONTROL  
AND PREVENTION

“Mi Činča kin towani ewaktonji kte śni”  
“I will never forget my child”

*The women always say that.*  
*The men always say that.*

## **Results of the Aberdeen Area Infant Mortality Study**

For Sudden Infant Death Syndrome

*In memory of Chris Krogh, MD, MPH; Dave Brewer, Coroner; Bertha Gipp, RN, BSN;  
Sidney Keith, Lakota Elder, and all the beautiful infants this area has lost who will live  
forever in our memories.*

June 30, 1998

Prepared for The Aberdeen Area Chairmen's Health Board

By Leslie L. Randall, RN, MPH; Thomas K. Welty, MD, MPH; Solomon Iyasu, MBBS, MPH; and Marian Willinger, Ph.D.

*Cover art work by  
Liam and Leslie Randall*

## **Dedication**

During the study we lost four individuals who made major contributions to the successful completion of the study.

Dr. Chris Krogh, the principal investigator of the study, died on February 22, 1994, in a tragic plane crash while providing services to Indian communities in North Dakota. At that time, Dr. Krogh was the Maternal and Child Health Consultant for the Aberdeen Area Indian Health Service and the medical consultant for the Northern Plains Healthy Start Program. In that capacity he was committed to the improvement of the health of Indian women and children in the Northern Plains. Without his critical work in protocol and questionnaire development, the study could not have been implemented.

Dave Brewer, the Oglala Sioux and Shannon County coroner, played a vital role in assuring that unattended deaths within his jurisdiction were thoroughly investigated. He notified the Indian Health Service of the high rates of SIDS and requested assistance in identifying the reasons why so many SIDS deaths were occurring. His suspicion that maternal alcohol use may contribute to many infant deaths has been confirmed by this study. In November 1996 Dave lost his battle with cancer and he passed on to the Spirit World.

Bertha Gipp, RN, Lakota Elder and SIDS Director for the North Dakota Department of Health, served for many years on the Aberdeen Area Perinatal, Infant and Maternal Mortality Review Committee and was instrumental in providing assistance from the Health Department in the investigation of Indian infant deaths. She was a very effective advocate for the health of Indian mothers and infants in North Dakota, nationally and internationally. She died suddenly from heart problems in July 1996.

Sidney Keith, Lakota Elder and Spiritual Leader, worked with Dr. Fred Mandell, Mary McClain and the Massachusetts SIDS Center to develop a Lakota-specific brochure for SIDS parents. The brochure has helped many SIDS parents cope with their grief. In addition, Mr. Keith shared his wisdom of Lakota values and culture with study staff to help them cope with the difficult task of interviewing parents whose babies died. Sidney lost his battle with pneumonia in June 1997 and passed on to the Spirit World.

Finally, we gratefully acknowledge the parents who shared very personal information with us so that we could learn what factors contribute to the high infant mortality rates among Northern Plains Indians. Each parent participated because they wanted to help learn what factors contribute to the high rate. We have shared the families' grief over the loss of their infants and, hopefully, provided some support to help them deal with their loss.

We honor the memory of these four individuals and all the beautiful infants who died and mourn their loss. We dedicate this report to them.

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## **Executive Summary**

### **The Aberdeen Area Infant Mortality Study**

Northern Plains Indian infants have been dying in excess of expected numbers. The rate of infant deaths is more than twice the national average. The Aberdeen Area of the Indian Health Service (AAIHS) had one of the highest rates of babies dying of what appeared to be Sudden Infant Death Syndrome (SIDS). SIDS is the death of an infant with no medical explanation. This means that after a review of the autopsy, family and medical history, and the death scene, an explanation for the death could not be found.

In December of 1992 the Aberdeen Area Infant Mortality Study was initiated to find out why Northern Plains Indian infants are at greater risk for dying of SIDS. The study was a collaborative effort of the Tribal Chairmen's Health Board, the Indian Health Service, the Centers for Disease Control and Prevention, and the National Institute of Child Health and Human Development. The study investigated 65 infant deaths between December 1, 1992 and November 30, 1996, and compared them with 130 living control infants. Standardized study procedures were used to make a final diagnosis on the cause of death, and questions were asked about medical, social, economic, and environmental factors of the families who participated in the study. Although infant deaths from various causes were included in the study, this report focuses on the preliminary findings from the comparison of data on the SIDS cases and controls.

The study confirmed that Northern Plains Indians suffer from a high rate of SIDS. Half the deaths investigated were due to SIDS. Among the preliminary findings are that mothers of infants who died of SIDS had fewer prenatal visits and expressed more problems with getting to their prenatal visits than mothers of control infants. Drinking rates are high in both SIDS case and control mothers but rates in case mothers are higher than control mothers before and during pregnancy. Infants who died from any cause were more likely to have mothers who binge drink in the second half of pregnancy than controls. Smoking rates are high in both the SIDS case and control mothers but rates in case mothers are higher than control mothers before and after pregnancy and in all three trimesters. SIDS babies had less than the recommended number of well child visits. Home visits by public health nurses or other health care workers during pregnancy or after the baby is born are reported less often among SIDS mothers compared with control infants.

Unlike other studies that have reported that infants who are placed to sleep on their stomachs are more likely to die of SIDS than infants who are placed to sleep on their backs, this study did not find an association between sleep position and risk of SIDS. This may be because most babies in the Aberdeen Area do not sleep on their stomachs. As emphasized in the "Back to Sleep" campaign, all infants should routinely be placed to sleep on their back.

The report provides other information on maternal and infant characteristics of the participants in the study. Recommendations for improving maternal and infant health derived from the Study are listed according to risk factor, they include some developed by conference participants during break-out group discussions. They include the following:

1. Alcohol and substance abuse programs should be implemented community wide especially in the schools. It will take a whole community to help women stop alcohol and illicit drug use before pregnancy and abstain during and after pregnancy.
2. Smoking cessation and prevention programs should be implemented community wide because of the high rates of smoking.
3. Pregnant mothers should begin prenatal care as early in pregnancy as possible and maintain regular visits throughout pregnancy. After the baby is born, parents should

take their babies for regular well-baby visits to their health care provider. Parents should ensure that their babies receive baby shots on schedule.

4. Prenatal care and well baby care should be more accessible. Regularly scheduled prenatal and well child clinics in field locations or mobile clinics and/or providing transportation for women who need it using CHR's or Healthy Start workers would increase accessibility.

The goal of this study is to help reduce the number of infants dying and to make a difference in the lives of American Indian families in the Aberdeen Area. It is hoped that the tribes will find this information useful in developing programs to reduce the number of infants who die of SIDS. More detailed analysis of the different aspects of the study data and preparation of manuscripts for publication in peer reviewed scientific journals is currently underway.

## Introduction

*“It should be for you a sacred day when one of your people dies. You must then keep his soul as I shall teach you, and through this you will gain much power; for if this soul is kept, it will increase in you your concern and love for your neighbor. So long as the person, in his soul, is kept with your people, through him you will be able to send your voice to Wakan-tanka.”*

*The Sacred Pipe - First rite  
Black Elk's account of the Seven Rites of the Oglala Sioux*

This report grew out of a conference entitled: “I will never forget my child.” The conference was held on September 17-19, 1997 in Rapid City, SD. At the conference preliminary results of the Aberdeen Area Infant Mortality Study were presented. This report describes the study objectives and methodology, and summarizes the preliminary findings of the analysis of data regarding maternal and infant characteristics of SIDS cases and controls. It also summarizes the recommendations of the conference participants. The conference was attended primarily by tribal people and had representatives from all but one of the 19 tribal communities in the area.

This report is being submitted to the Aberdeen Area Tribal Chairmen's Health Board and represents the first analysis of the data from the Aberdeen Area Infant Mortality Study. Results of future analysis will be forthcoming. Each report will be presented to the Tribal Chairmen's Health Board before any further distribution.

**“... When we can show in black and white, the results of alcohol, tobacco, and other abuses that occur on the Aberdeen Area Reservations, when these abuses can be explained in the common language of (men), then our tribal (men) will understand what is happening to them and our communities.”**

*Charles W. Murphy, January 1994, Native Men's Wellness Conference, Aberdeen, SD*

## Historical Perspective

Northern Plains Indian infants have been dying in excess of expected numbers. The rate of infant deaths is more than twice the national average. About 10 years ago the American Academy of Pediatrics was made aware of this increase in the number of deaths among American Indian infants and a committee was formed to review these cases of infant deaths in four areas: Portland, Alaska, Billings, and Aberdeen. The initial review found that there were indeed large numbers of infant deaths that appeared to be Sudden Infant Death Syndrome (SIDS). SIDS is the death of an infant with no medical explanation. This means that after a review of the autopsy, family and medical history, and the death scene, an explanation could not be found.

The Perinatal Infant Mortality Review (PIMR) Committee of the Aberdeen Area Indian Health Service (AAIHS), and other reviews of infant mortality within the Indian Health Service (IHS) provided evidence that the Aberdeen Area had one of the highest rates of babies dying of what appeared to be SIDS. In 1990 the PIMR Committee corresponded with the National Institute of Child Health and Human Development (NICHD) and the Centers for Disease Control and Prevention (CDC) about the high rate of infant death and to enlist their participation in learning more about these deaths so that they could be prevented. This information was shared with the Aberdeen Area Tribal Chairmen's Health Board

(AATCHB). In 1991, the AATCHB, AAIHS, NICHD, and CDC collaboratively initiated the study of infant mortality among Northern Plains Tribes.

A steering committee was formed to oversee the study during its design. This steering committee consisted of representatives from universities: Harvard University, University of Colorado, University of North Dakota; federal agencies: NICHD, CDC, IHS, AAIHS; Tribal representatives; and pathologists specializing in forensic autopsies, pediatric autopsies and neuropathology. The steering committee provided technical and professional oversight.

The proposal for the Aberdeen Area Infant Mortality Study was completed and approved with all revisions in 1992 by all sponsors and the National Indian Health Service Institutional Review Boards (IRB). Subsequently, ten tribal communities passed supporting resolutions to participate in the study.

## Background

Historically, the AAIHS has the highest infant mortality rates (IMR) of all IHS areas (Figures 1 & 2). In some tribes the rates exceed 30/1,000 live births, a rate 4-5 times higher than the national average. Most of these deaths were post neonatal from what appears to be Sudden Infant Death Syndrome (SIDS) which in some tribes accounted for half the total infant deaths. The reasons for the high infant mortality and SIDS rates among Northern Plains Indians in the area were poorly understood. Furthermore, approximately half of those infant deaths attributed to SIDS did not have an autopsy and even fewer had a review of the death scene or the clinical history. For this reason, the validity of the cause of death diagnosis was in question.

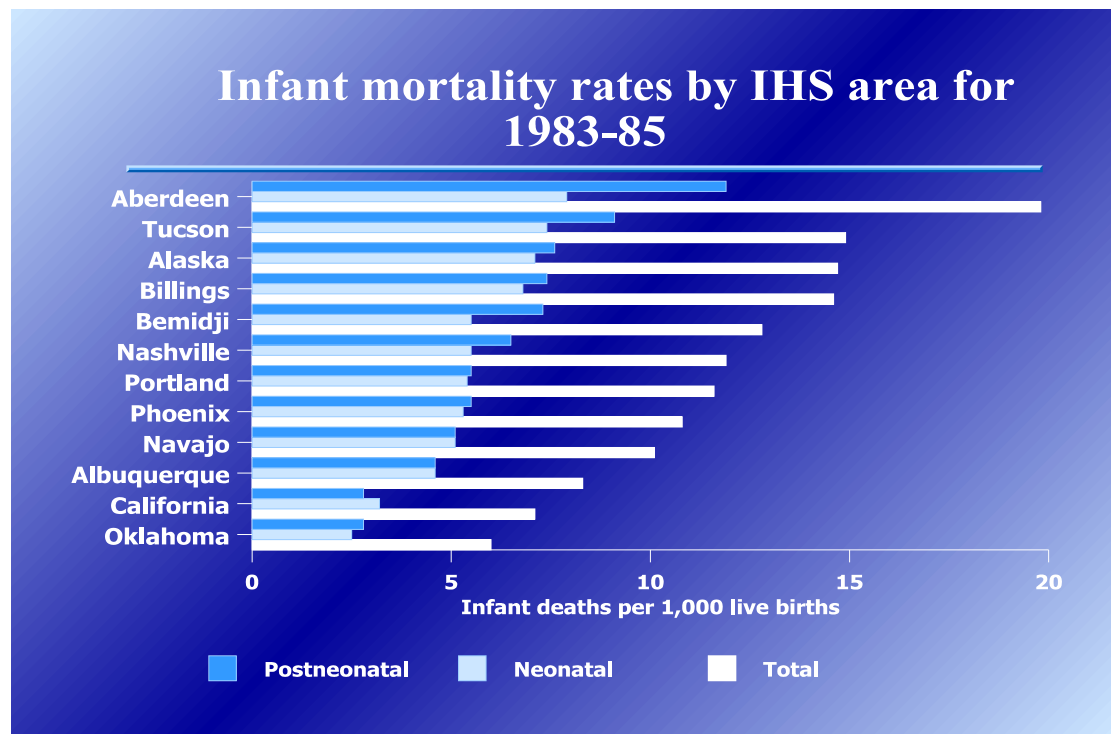
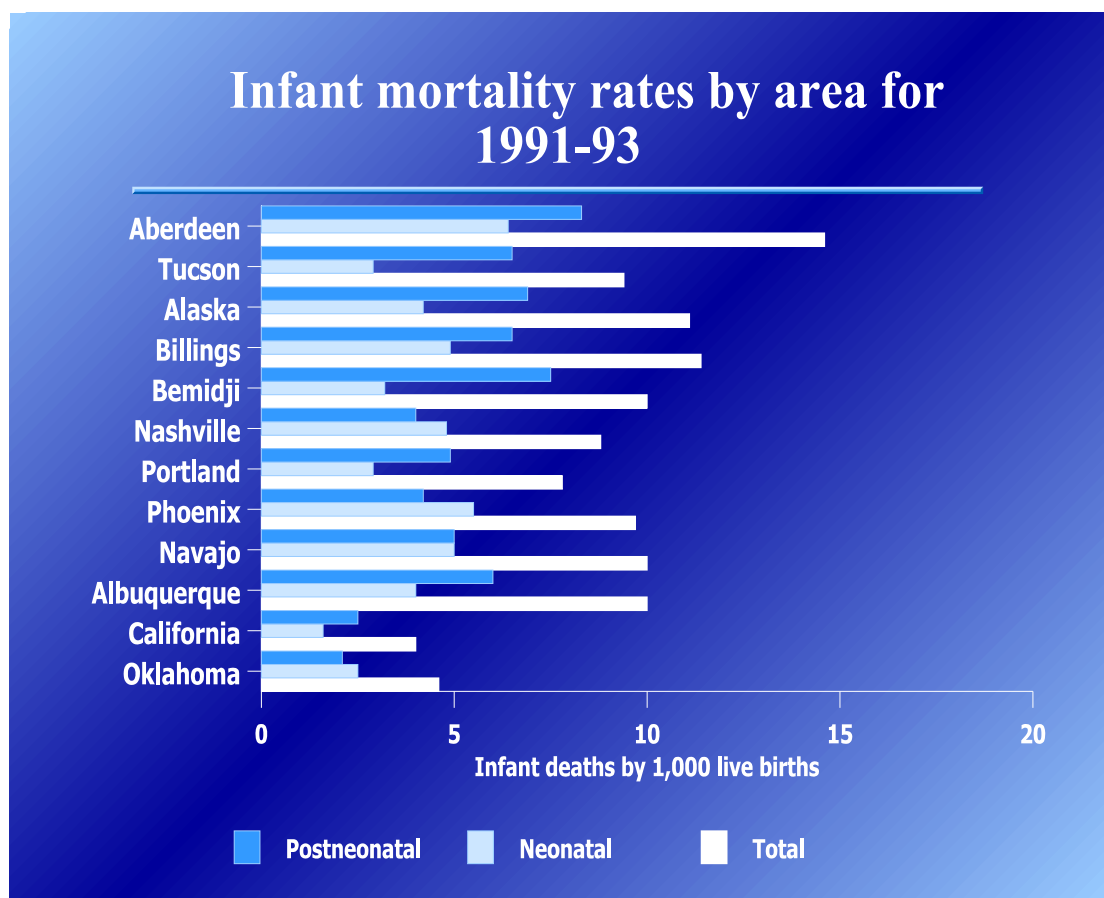


Figure 1

To improve the validity of the cause of death data and to identify the factors contributing to the high infant mortality and SIDS mortality rates among American Indians in the area, the IHS, CDC, NICHD, and AATCHB began the Aberdeen Area Infant Mortality Study in December of 1992. Ten of the 19 Tribes and Tribal communities, representing 66% of the population, participated in the study.



**Figure 2**

## Study Population

The AAIHS serves approximately 100,000 American Indian/Alaska Natives in North and South Dakota, Iowa and Nebraska (Figure 3). Nine tribes and one urban community participated, consisting of two-thirds of the entire AAIHS service area population. Of these, four were in North Dakota and six were in South Dakota. The study population included tribes in the AAIHS that provided (1) a tribal resolution of support for the study, and (2) appropriate state and/or tribal enabling legislation for coroners *or had a death investigation system in place* and (3) Service Unit Director approval for each AAIHS site. Only tribal communities with a resolution of support were incorporated in the study population. This was to ensure that the sovereignty of the Tribal governments was recognized and acknowledged as summarized by Dr. D. R. Baines in his discussion of issues of cultural sensitivity (1992).

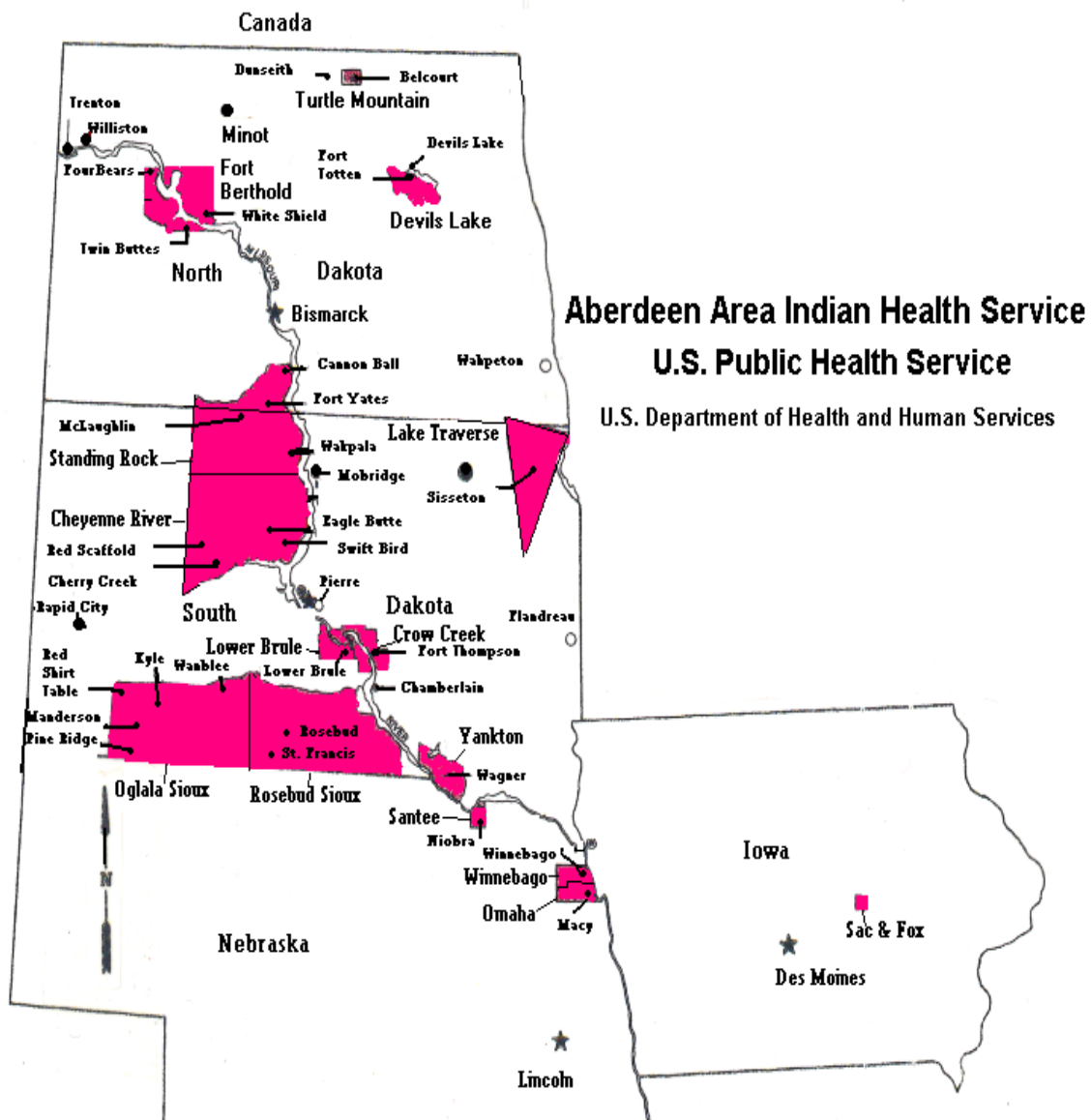


Figure 3

## **Methodology**

The study employed a prospective case-control design and enrolled infants who died after initial discharge from the hospital. For each case infant, two living control infants, one born before and another born immediately after, were enlisted into the study. Standardized methods and instruments were used to collect information on study subjects. These included a detailed parental/caretaker interview, death scene investigation, medical record review, autopsy and neuropathology studies, special cotinine assays and a surveillance system for reporting infant deaths.

From December 1, 1992 until November 30, 1996, the study investigated 72 infant deaths of which parents of 65 cases and 144 controls were interviewed. The 65 case interviews had 130 matching control interviews. Of these, there were 34 SIDS cases and 68 matching control infants. All comparisons between case infants and control infants take into account the baby's age and reservation at time of birth.

A certificate of confidentiality has been obtained from the National Institute on Alcohol Abuse and Alcoholism under the Authority of Section 301 (d) of the Public Health Service Act (42USC §241 (d)) to protect the identity of the participants in the study.

## **Study Objectives**

The four objectives of the study were:

- (1) To collect and verify, as far as possible, data that are presently or potentially available through the health care system relating to infant mortality in the Aberdeen Area;
- (2) To supplement and substantiate those existing data through collection of new data, developing permanent systems that allow communities to collect the necessary data for "state-of-the-art" local review of each infant death;
- (3) Using those data, to develop more valid cause-specific infant mortality rates for this population; and
- (4) To identify factors that contribute to high infant mortality rates and to SIDS in particular and to generate hypotheses about the potential cause(s) of SIDS for further studies.

## **Study Questions**

The three main study questions were:

- (1) What are the risk factors and protective factors associated with infant mortality overall and SIDS mortality in particular among the study population?
- (2) Are specific pathologic lesions associated with infants dying of SIDS?
- (3) What are the specific causes that explain the high infant mortality rate in the Aberdeen Area?

## Participant selection

### Cases:

Cases for this study were all American Indian infants, who died within 365 days of birth, who lived on or near Reservations or communities participating in the study whose death occurred between **December 1, 1992 and November 30, 1996**.

Year of death	92	93	94	95	96	Total
# of infant deaths	2	25	18	18	9	72

Table 1

The table provides a listing of the number of eligible deaths that occurred within the study population by year. Infants who died before they were discharged from the hospital were excluded from the study.

### Controls:

For each case infant who resided on a reservation at the time of death, two living control infants were selected and matched by reservation, infant age, and race of either parent being American Indian. This was to be able to analyze all other variables including all other infant (sex, birth weight), maternal (age, education), environmental (housing, room temperature, exposure to environmental tobacco smoke), as possible risk factors for infant mortality and SIDS while controlling for the age of the infant and community of residence. Age matching of the control infants was done by selecting infants born just before and just after the case infant from the same reservation as the biological mother or, if the mother were non-Indian, the reservation of the father. Control infants were identified using the Service Unit's IHS patient registration system (RPMS) which contains all patients receiving care at that Service Unit, the labor and delivery log and the Public Health Nurses' log. All three data sources were used to verify which two infants were born closest to the case infant.

If the mother was an enrolled member of a **participating** tribe but was residing in a non-Reservation community at the time of the case infant's birth, the two controls were selected from the next born and previous born Indian infants from the service unit where she was enrolled. If the mother was non-Indian, controls were selected from the father's tribe. The qualifying factor for matching on residence was restricted to reservation of residence and not on the district within each reservation since there were too few births within each district of the reservation to be able to match for age as closely as needed. If the parents of either control infant were unavailable or refused to participate, a second control infant was selected in the same manner as the first control infant.

This study was designed so that the case infants and their two matched control infants were of similar ages and were from the same tribal communities.

## Maternal and Infant Characteristics

Hush, hushaby, little woman!

Be brave and weep not!

The spirits sleep not;

'Tis they who ordain

To woman, pain.

Hush, hushabye, little woman!

Now, all things bearing,

A new gift sharing

From all those above —

To woman, love.

---- Sioux Lullaby.

## Background

Infants born to mothers with less than 12 years of education, teen mothers and families with incomes less than \$15,000 are more likely to die of SIDS or other causes (Hoffman and Hillman, 1992; Pezzino and Iyasu, 1996; Alessandri et al., 1996). Late or no prenatal care and a reduced number of well baby visits are also associated with SIDS (Hoffman and Hillman, 1992; Ford et al., 1992; Ponsonby et al., 1995; Mitchell et al., 1997). While breastfeeding has been shown to protect infants against ear disease and diarrhea (Scariati et al., 1997; AAP Workgroup on Breastfeeding, 1997), its association with SIDS is variable. Some studies have shown breastfeeding reduces the risk of SIDS. A case-control study of SIDS in Southern California reported that 75.6% of control mothers ever breast-fed compared with 55.9% of case mothers (Klonoff-Cohen et al., 1995). Not breastfeeding was observed to be a risk factor for SIDS in New Zealand (Mitchell et al., 1993). However, others have not shown an association (Gilbert et al., 1995).

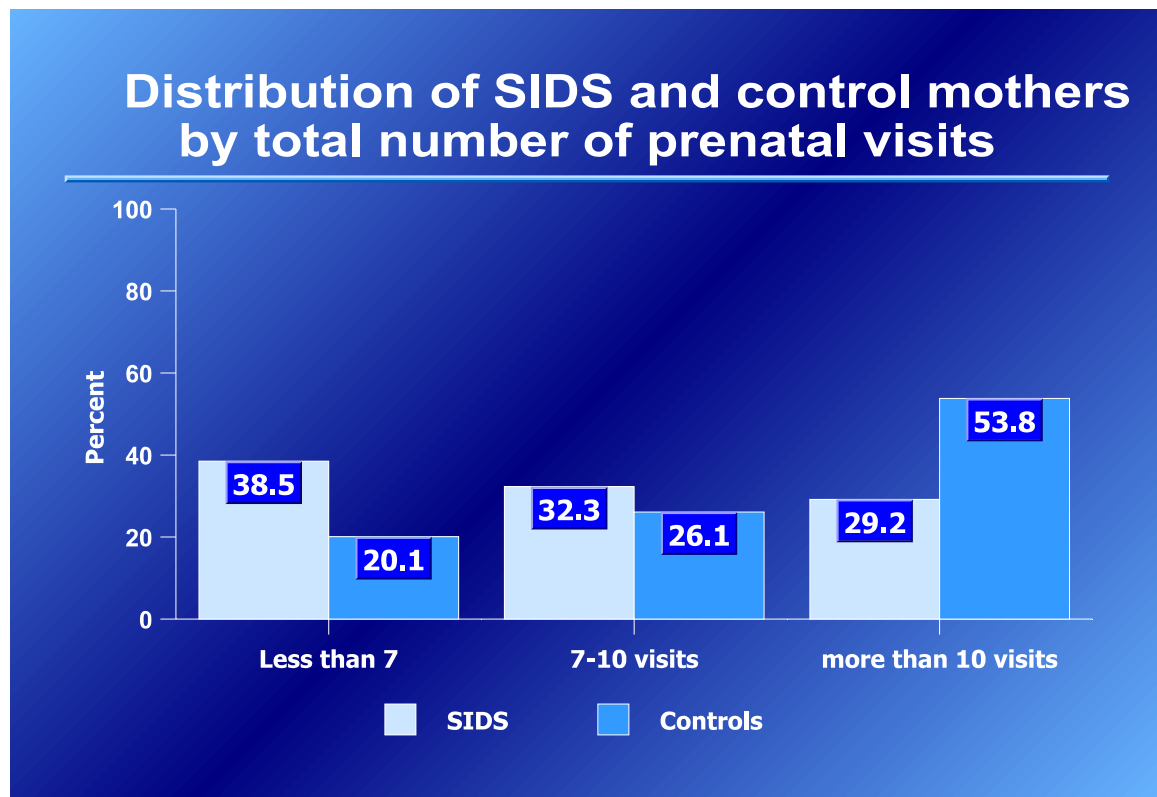
## Results

### Maternal Characteristics

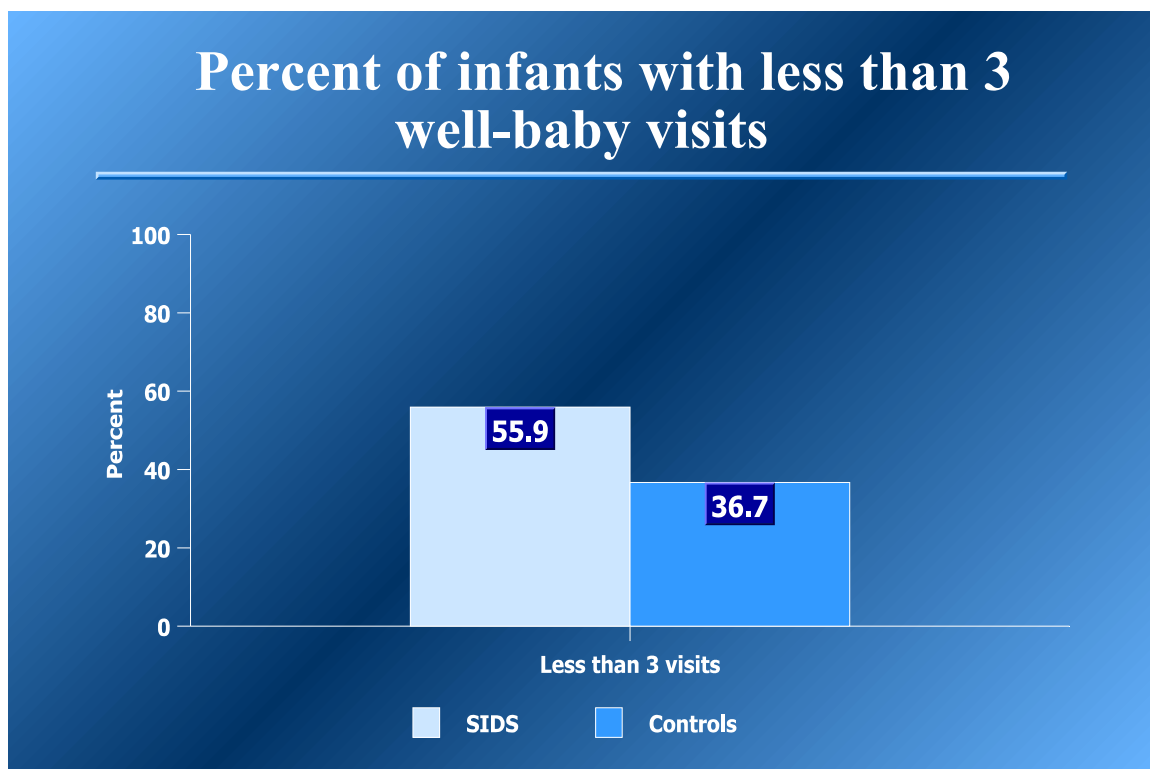
The young maternal age, low educational level and low family income of the study participants increased the risk for poor infant outcomes. The mean age of the mothers was 24.7 for both cases and controls. Although the mean ages were the same for case and control mothers, 17.5% of case mothers were less than 18 years of age compared

with 8.8% of control mothers, and with 5.2% of all women giving birth in the U.S. in 1995 (Ventura et al., 1997). The percent with 13 or more years of education was higher among controls (26.7%) than among SIDS mothers (10.7%). Among case mothers, 91.2% had less than a high school education as compared with 76.3% for controls. Nationally, 22.5% of women giving birth in 1995 had less than a high school education (Ventura et al., 1997).

Although a high proportion of mothers reported starting prenatal care in the first trimester, there was a large difference in the number of visits between case and control mothers: 20% of control mothers as compared with 38.5% of case mothers reported less than 7 prenatal visits (Figure 4). The mean number of prenatal visits was 11.1 among control mothers and 9.1 among SIDS mothers. In addition fewer control mothers, 36.5%, reported less than three well baby visits compared with 55.9% of case mothers (Figure 5). In both instances of care, transportation problems were cited more frequently by case than control mothers. Case mothers reported more problems with transportation to prenatal care than control mothers (45% for SIDS others and 15% for controls).



**Figure 4**



**Figure 5**

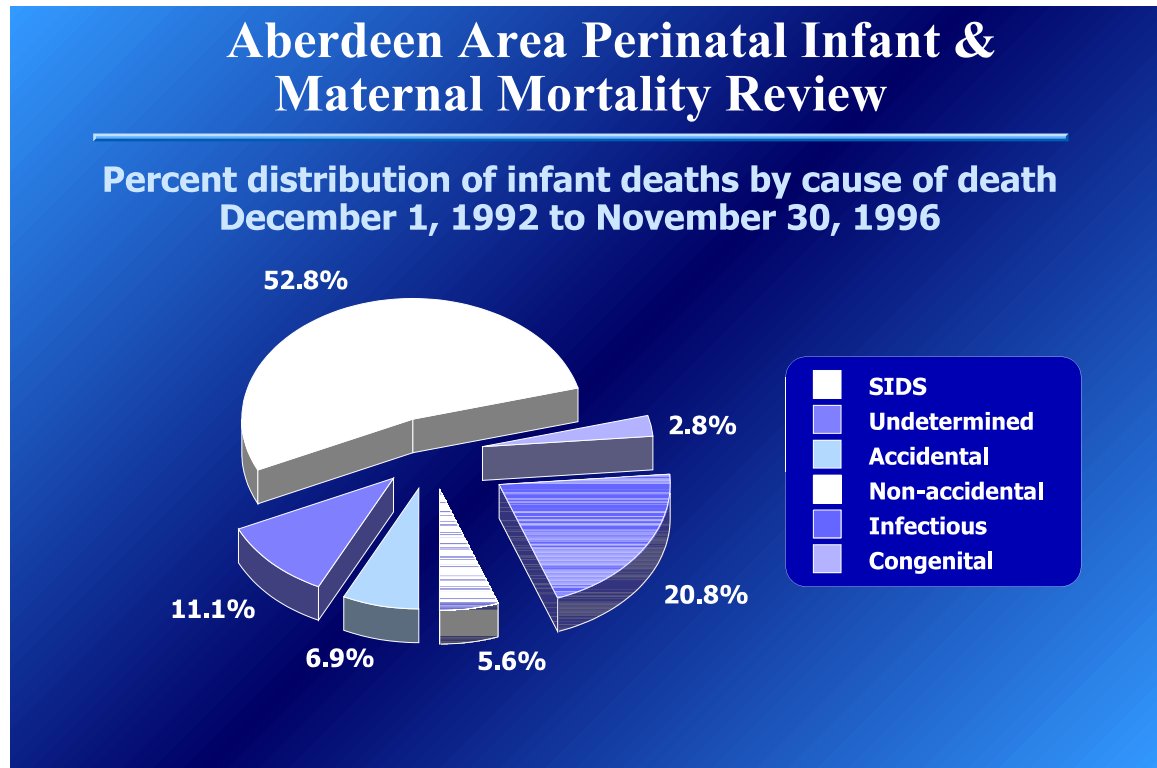
Other factors related to health care access showed that a higher proportion of SIDS families did not have a phone in the home (65%) compared with controls (40%), and reported less often than controls that they had been visited at home by public health nurses (76% vs 36%). For all interviews, 23.8% of the control mothers and 19.7% of the case mothers spoke Lakota; more than 90% of all parents had running water in their home. Tests of drinking water did not suggest any problems that would explain the high rate of infant deaths.

The proportion of families reporting incomes \$15,000 or under, which is below the poverty line, were 83% for cases and 70% for controls. This compares with 20% of children nationally living below the poverty line in 1995 (U.S. Bureau of Census).

More than 50 percent of the SIDS babies had less than three well baby visits (Figure 5). The average number of well baby visits was 2.9 for SIDS and 3.3 for controls. Forty-seven percent of the control babies were ever breastfed compared to 37% of the SIDS babies. Nationally in 1995, 64% of white mothers, 37% of black mothers and 61% of Hispanic mothers reported breastfeeding in the hospital, but this declined to 24.1% for whites, 11.2% for Blacks, and 19.6% for Hispanics by six months of age (Ryan, 1997).

### Infant characteristics

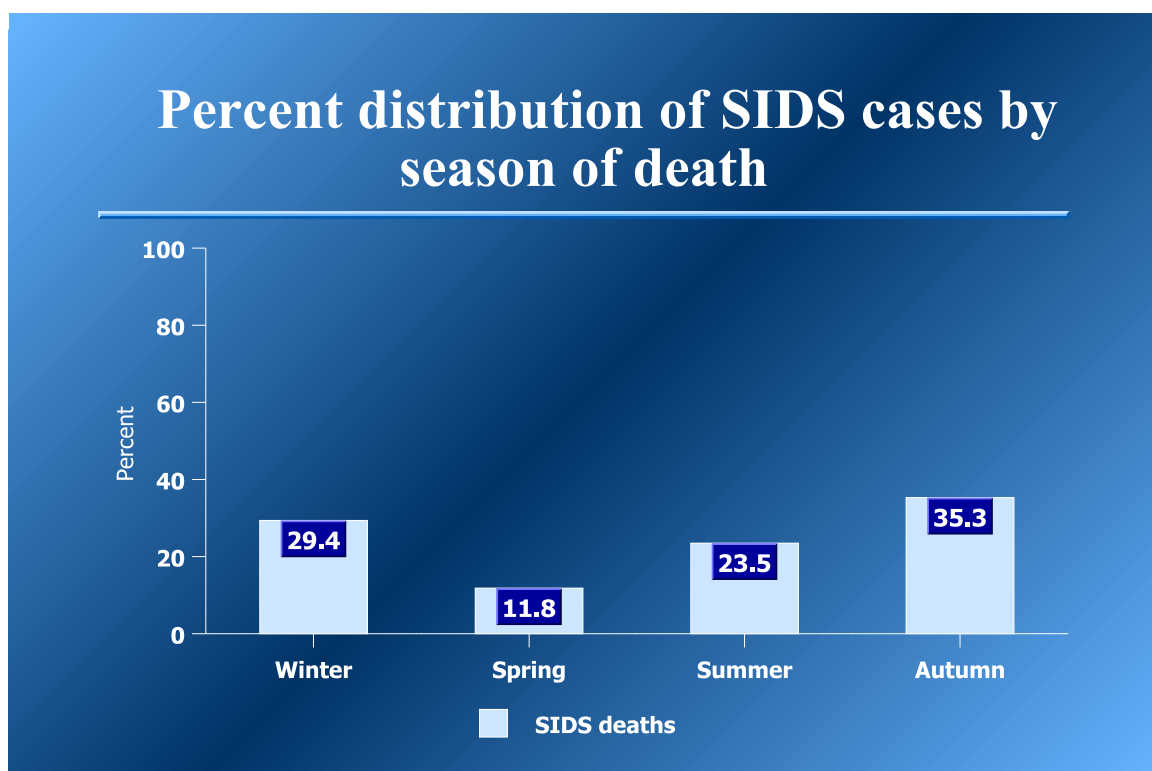
Of the 72 infant deaths reviewed by the PIMR, 52% were SIDS. The remaining causes of death were infectious (21.5%), accidental (7.7%), nonaccidental due to homicide (3.1%), congenital defects (3.1%), and undetermined (12.3%) (Figure 6).



**Figure 6**

In other populations studied, about 25% of SIDS infants are born low birth weight (<2500) with SIDS infants being 3 times more likely to be low birth weight (LBW) compared to controls (Hoffman and Hillman, 1992). In contrast, only 3% of SIDS infants in the Aberdeen Area weighed less than 2,500 grams at birth. This is similar to 5% LBW among American Indian SIDS deaths observed nationally by Pezzino and Iyasu (1996).

The age distribution of the infants who died of SIDS in the Aberdeen Area is characteristic of all SIDS deaths that have been studied worldwide. Eighty-eight percent of the SIDS cases were less than six months of age, with a peak between one and four months. Mean age at death was 109 days or 3.6 months (min=9 days or 0.3 months and max =361 days or 11.9 months). Of the thirty four deaths, 6 (17.6%) were less than one month, 11 (32.4%) were 1-2 months, 8 (23.5%) were 3-4 months, 5 (14.7%) were 5-6 months, 3 (8.8%) were 7-8 months, and 1 (2.9%) were 9-11 months. The study did not include infants who died before discharge from the hospital of delivery. The majority of the deaths occurred in winter and autumn (Figure 7). Of the SIDS infant deaths, 50 percent were male.



**Figure 7**

## Recommendations

1. Women should come in as early in pregnancy as possible for prenatal care and should come in regularly as recommended by their health care providers throughout pregnancy.
2. Infants should be brought in for well-child care and immunizations as recommended by their health care provider. Education regarding basic infant care including information regarding regular well-child care, appropriate care for fevers, immunizations, infant nutrition, car seat usage, and infant development should be given to parents.
3. Public health nurses, Healthy Start workers or other outreach workers should try to visit all pregnant women at home at least once in the prenatal period and once in the post partum period to assess the mother and infant and to provide education.
4. Breastfeeding should be promoted during the first 12 months of life. Information on how to breastfeed and appropriate growth measures of the infant should be given to the parents.

## Infant Care Practices in the Home

*“White Buffalo Cow Woman Appears, you have prayed to **Wakan-Tanka**; you will now go forth among your people in a holy manner, and you will be an example to them. You will cherish those things which are most sacred in the universe; you will be as Mother Earth - humble and fruitful. May your steps, and those of your children, be firm and sacred! As **Wakan-Tanka** has been merciful to you, so you, too must be merciful to others, especially to those children who are without parents. If such a child should ever come to your lodge, and if you should have but one piece of meat which you have already placed in your mouth, you should take it out and give it to her. You should be generous as this! As I now place this meat in your mouth, we should all remember how merciful **Wakan-Tanka** is in providing for our wants. In the same manner you must provide for your children!”*

The Sacred Pipe - Black Elk's account of the Seven Sacred Rites of the Oglala Sioux.

### BACKGROUND

According to many studies conducted abroad and some in the United States, infants who are placed to sleep on their stomach (prone) have a higher risk of dying from SIDS than those placed on the back or side (non-prone positions) (Willinger et al., 1994). Evidence from recent research indicates that compared to the back, placing the baby to sleep on the side is also associated with an increased likelihood of dying from SIDS (Fleming et al., 1996). The exact mechanism of how stomach or side sleeping position increases the risk of SIDS is not very well understood but evidence so far suggests that babies who are placed on their stomach may be rebreathing expired air that is rich in carbon dioxide. A buildup of carbon dioxide normally causes a gasping reflex or arousal and increases in heart and respiratory rates but some babies dying from SIDS may have a reduced sensitivity to carbon dioxide preventing them from arousing or gasping. Soft bedding is hazardous because it increases the chances of rebreathing (Chiodini and Thach, 1993).

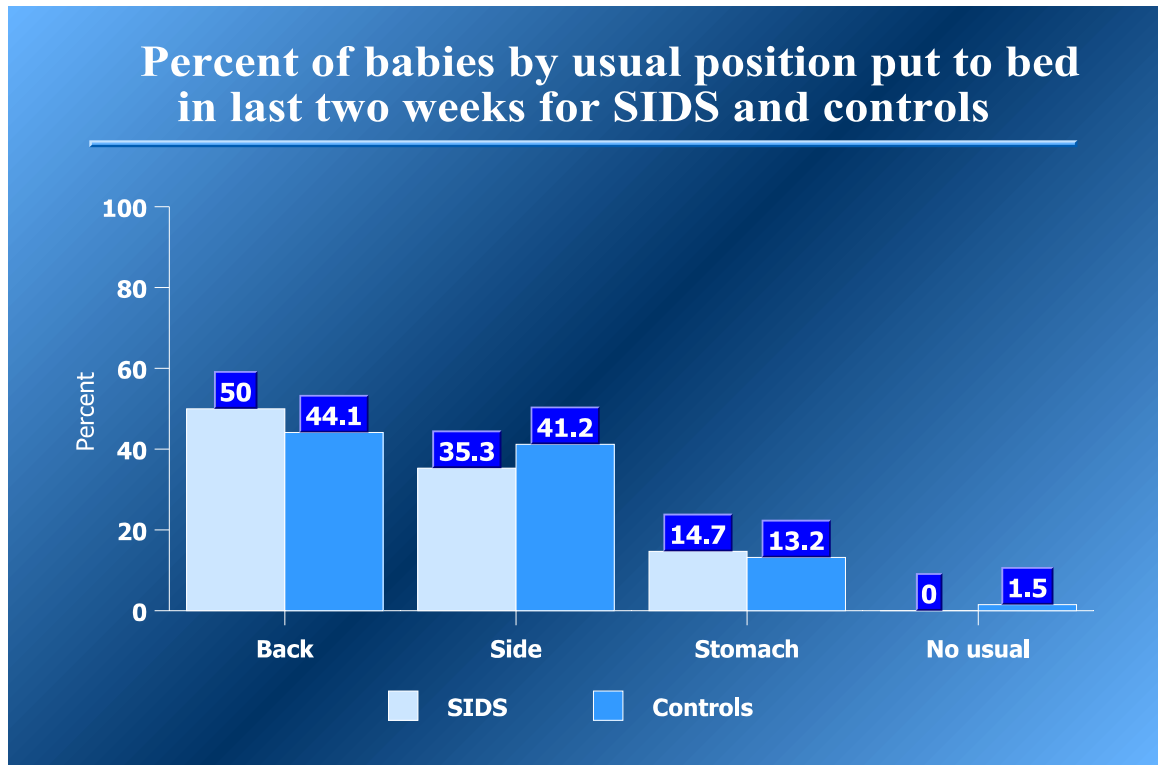
In 1992, the American Academy of Pediatrics (AAP) published a statement recommending that all healthy infants be placed to sleep on their back (AAP Task Force on Infant Positioning and SIDS, 1992; revised; AAP Task Force on Infant Positioning and SIDS, 1996). In 1994, the “Back to Sleep” campaign, a national public health education campaign to teach the public and health care providers about ways to reduce the risk of SIDS was launched. In the U.S. from 1992 to 1996, the SIDS mortality rate among infants less than one year declined 38%. During the same years, the proportion of infants placed to sleep on their backs or sides rose from 24% to 70%.

A number of studies have shown that excessive layers of clothing and bedding tend to overheat the baby and increase the risk of SIDS (Ponsonby et al., 1992; Williams et al., 1996). Some babies may stop breathing during their sleep when they are overheated.

The role of room and bed sharing in SIDS is not known. Bed sharing has not increased or decreased the risk of SIDS in other studies. However, several studies have shown that if the mother smokes and shares the bed with her baby, the risk of SIDS is increased (Fleming et al., 1996; Mitchel et al., 1997).

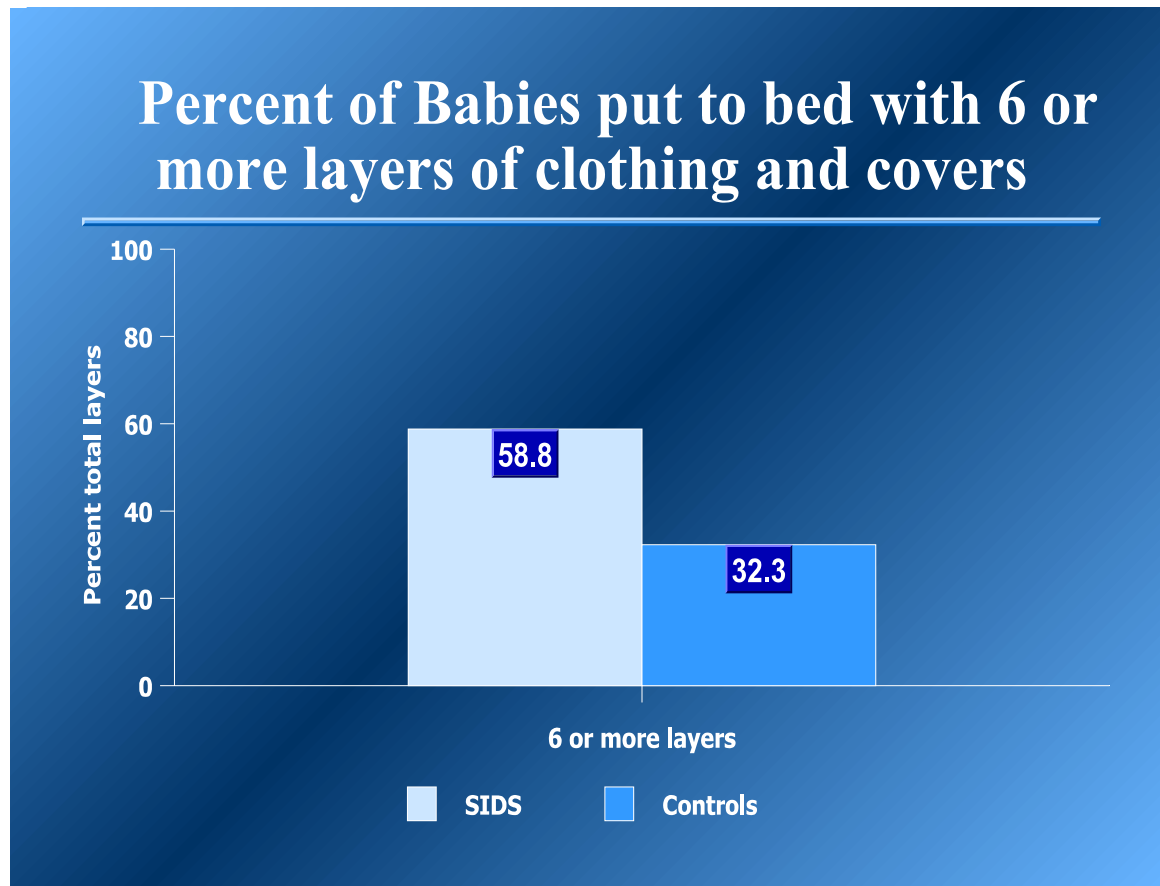
## Results

1. The percentage of infants usually put on their stomach to sleep was small and did not differ between SIDS and control infants (Figure 8). The position in which infants were usually found was similar between SIDS and control infants.



**Figure 8**

2. SIDS infants and control infants differed in the number of layers of clothing (excluding diapers) worn to bed and in the number of covers on top of them on an average night in the last two weeks. A higher percentage of SIDS infants wore 3 or more layers of clothing or covers than control infants. Adding the layers of clothing and covers together, a higher percentage of SIDS infants had six or more layers than did control infants (Figure 9)



**Figure 9**

3. There were no differences between SIDS cases and control infants in the percentages of infants sharing a room or a bed to sleep with parents. The majority of SIDS and control infants slept in the same room as their parents (94% vs. 86%). Slightly over half of SIDS and control infants slept on the same bed as parents (57% vs. 56%).

## RECOMMENDATIONS

1. As emphasized in the “Back to Sleep” campaign, all infants should continue to be routinely placed to sleep on their backs to reduce the risk of dying from SIDS.
2. Babies should be placed to sleep on a firm mattress or other firm sleep surface. Don’t let the baby sleep on sheepskin, pillows, waterbeds, quilts, comforters, or other soft materials. This recommendation is consistent with the American Indian tradition of placing infants on their backs on cradle boards.
3. Avoid putting on too many layers of clothing or too many layers of covers/blankets when putting babies to bed at night. A sleeper and one blanket are sufficient to keep the baby warm in most situations. Parents should judge how many covers the baby needs based on how many blankets they themselves need.
4. Since sharing a room or bed with parents occurred commonly with SIDS and control infants, it is important for parents not to abuse alcohol, drugs or tobacco. If impaired by alcohol or drugs, parents who share beds with infants may accidentally roll over on the baby during sleep, whereas those who sleep separately may not hear if their babies are having difficulty breathing or changes in expected sleep/wake cycles.

# TOBACCO

*“O Wakan-tanka, behold the pipe! The smoke from this herb will cover everything upon earth, and will reach even to the heavens. May the way of thy people be as this smoke. We have offered this pipe to You, and now I place within its bowl the sacred kinnikinnik<sup>1</sup>. You have taught us that the round bowl of the pipe is the very center of the universe and the heart of man! O Wakan-tanka, bend down to look upon us today; look upon thy pipe with which we are about to send a voice, along with the winged peoples, the four-leggeds, and all the fruits of our Mother Earth. All that You have made will join with us in sending this voice!”*

The Sacred Pipe - Black Elk's account of the Seven Rites of the Oglala Sioux.

## BACKGROUND

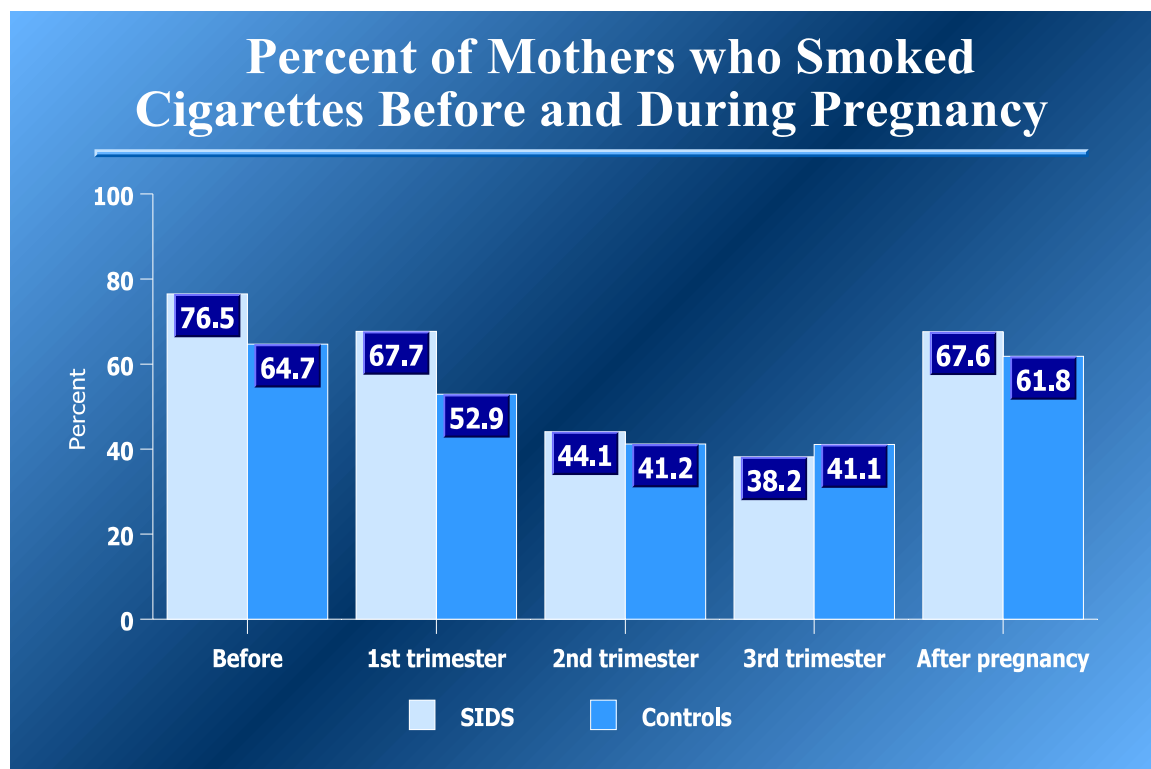
Tobacco has been used ceremonially by American Indians for many generations and its powers respected by spiritual leaders. Ceremonial use of tobacco has not caused health problems, but habitual use of cigarettes has caused many health problems among American Indians. Cigarette smoking and exposure to environmental tobacco smoke (ETS) have been found to increase the risk for SIDS 2-3 times in many other studies (Hoffman and Hillman, 1992; Mitchell et al., 1996; Mitchell et al., 1997; Ponson et al., 1995; MacDorman et al., 1996). There are several ways that cigarette smoking and ETS may make a baby more likely to die of SIDS. When pregnant women smoke or are exposed to ETS, levels of carbon monoxide increase in their blood and the amount of oxygen available to the baby inside the mother is decreased. This decreased amount of oxygen causes babies of smokers to be smaller and may also cause problems in the formation of the brain that may make it more likely that the baby will stop breathing and die of SIDS. In addition cigarette smoke contains lots of poisons that may affect the development of the baby inside the mother. After birth, exposure to ETS increases levels of carbon monoxide and nicotine in the baby's blood and may also increase the risk of SIDS. The effects of smokeless tobacco use by the mother are not known, but infants of such mothers are likely to be exposed to high levels of nicotine and other harmful substances that are absorbed from the smokeless tobacco into the mother's blood. Further studies, including ongoing research which is part of the Aberdeen Area Infant Mortality Study, may help us learn more about the relationship of smoking, smokeless tobacco and SIDS/infant mortality.

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<sup>1</sup> Kinnikinnik, often called chanshasha, is an ingredient of the tobacco of the Sioux; it is the dried inner bark of the red alder or the red dogwood (*Cornus stolonifera*). This is rarely smoked alone because of its bitterness; there is usually added to it an equal part of the Ree twist tobacco and also a small portion of some fragrant root or herb, often the Sweet Ann root. These ingredients are always mixed in a ritual manner. The Sacred Pipe - Black Elks account.

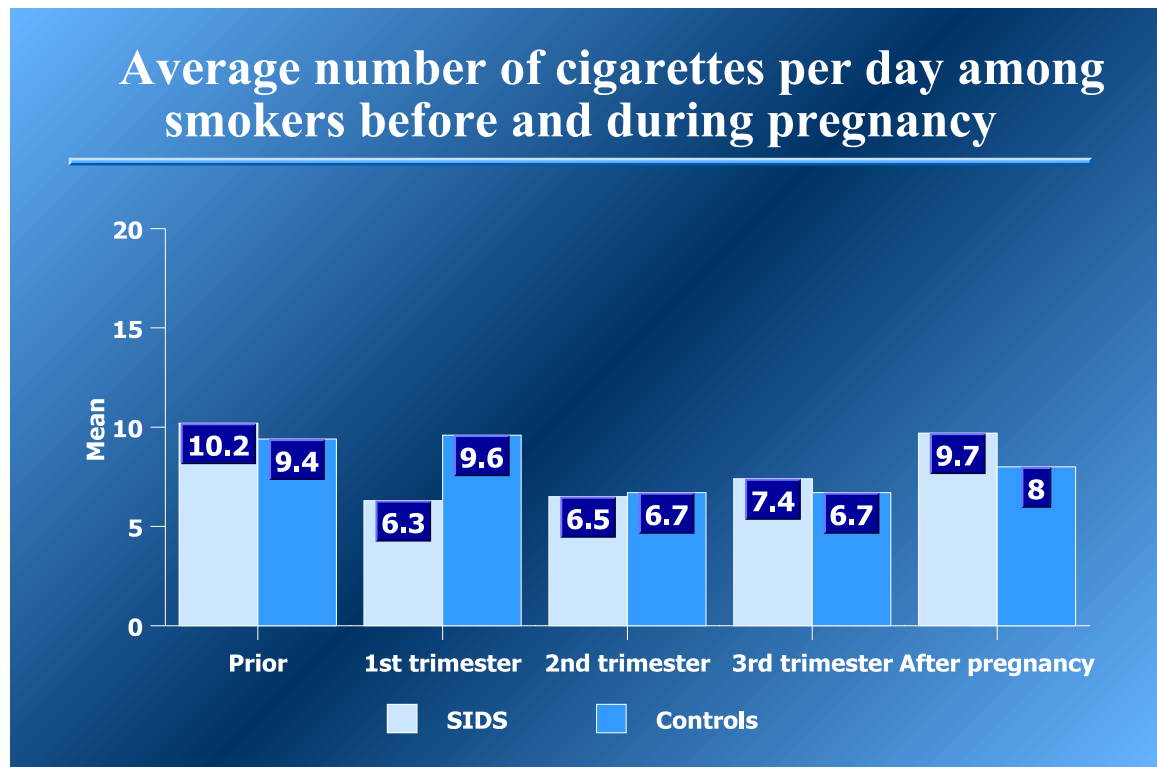
## RESULTS

1. Smoking rates are high in both the SIDS case and control mothers, with more than half of mothers reporting smoking at some time in their pregnancy (Figure 11). Nationally, 14% of women reported smoking during pregnancy on birth certificates in 1995 (Ventura et al., 1997) and in 1990-91, 20% of American Indian women reported smoking during pregnancy (MacDorman et al., 1997).
2. Smoking rates before or during the first trimester of pregnancy were higher among case mothers than control mothers (Figure 10).
3. Smoking rates decrease during pregnancy for cases and controls but increase after delivery almost as high as they were before pregnancy (Figure 10).



**Figure 10**

4. Pregnant women who smoke, smoked an average of 10 cigarettes per day before pregnancy. Those women who continue smoking during pregnancy decrease the number of cigarettes smoked per day to about seven. Average number of cigarettes smoked per day are similar in case and control mothers (Figure 11).



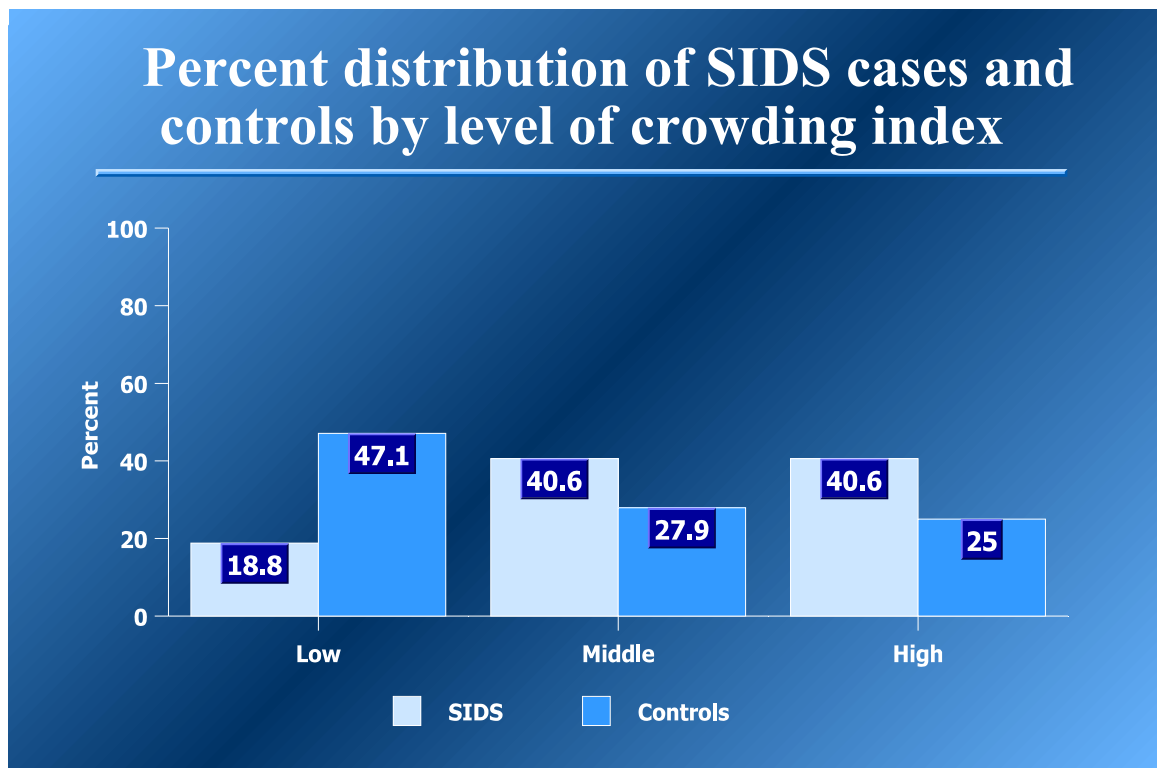
**Figure 11**

5. The duration of exposure to ETS is high for both pregnant women and their babies (Table 2). Ninety to 100% of mothers were exposed to cigarette smoke during pregnancy, and 80-90% of infants were exposed after birth.

Mean hours per day exposed to environmental tobacco smoke		
	SIDS Cases	Controls
Mothers	8.6	6.1
Infants	3.1	2.7

Table 2

6. Cotinine is a major metabolite of nicotine and can be measured in urine or blood to assess exposure to ETS. Eight of 63 control babies had levels of cotinine similar to levels found in smokers. Forty-seven of the 63 babies had evidence of lower levels of ETS exposure. Only 8 of the babies had no indication of ETS exposure. Results from the case babies are not completed yet. There was more crowding in the homes of SIDS cases than control homes (Figure 12). Such crowding may lead to higher levels of ETS when family members smoke thereby exposing babies to higher levels of the toxic substances in ETS, especially if family members smoke in the same room or where the baby sleeps.



**Figure 12**

7. Smokeless tobacco use after pregnancy was low (9.2% in cases and 3.2% in controls). About half of the women had used smokeless tobacco at some time. We do not know smokeless tobacco use rates during pregnancy.

## RECOMMENDATIONS

1. Smoking cessation and prevention programs should be implemented community- wide because of the high rates of smoking.
2. Smoke free environments should be maintained for pregnant women, infants and children. Exposure to ETS should be reduced by establishing smoke-free offices and homes. Health care providers should ask about ETS exposure and write prescriptions for smoke-free environments for mothers and children. ETS causes many other health problems, and exposure should be decreased or eliminated for everyone. To successfully establish smoke-free homes, it may be necessary to educate the entire family on the hazards of ETS exposure.
3. If pregnancy is planned or wanted, women should stop smoking before pregnancy and should avoid ETS exposure.
4. Prenatal care providers should screen women for tobacco use and counsel them to stop. A carbon monoxide meter that displays an immediate reading of carbon monoxide levels in exhaled (breathed out) air can help pregnant women understand why smoking harms the unborn baby. If the carbon monoxide level is high, the baby does not get enough oxygen, and oxygen is needed for fetal development and well-being. Providers can use the measured level and information on how high levels reduce the baby's oxygen to counsel the woman to stop smoking and to reduce or eliminate ETS exposure. Such counseling should be done for smoking mothers at each prenatal visit.
5. Infant and child care providers should maintain a smoke-free environment for the child. Educational activities should target these areas of concern.

# ALCOHOL AND SUBSTANCE ABUSE

*“At this sad time today among our people, we are scrambling for the ball<sup>2</sup>, and some are not even trying to catch it, which makes me cry when I think of it. But soon I know it will be caught, for the end is rapidly approaching, and then it will be returned to the center, and our people will be with it. It is my prayer that this be so, and it is in order to aid in this ‘recovery of the ball,’ that I have wished to make this book.”*

The Sacred Pipe - Black Elks’s account of the Seven Rites of the Oglala Sioux.

## BACKGROUND

Maternal alcohol use has not been found to be a risk factor for SIDS in other studies, but no other studies assessed it as carefully as was done in this study. When pregnant women drink, the baby is exposed to levels of alcohol that are similar to the levels in the mothers. Binge drinking<sup>3</sup> during pregnancy is of special concern because high blood alcohol levels that occur during binge drinking are known to have adverse effects on the baby, including fetal alcohol syndrome (FAS) and other alcohol-related developmental disorders (ARDD). The toxic effects of alcohol could also affect the breathing center of the brain and contribute to SIDS deaths. Ongoing research from this study may help us learn more about the effects of alcohol on the fetal brain. Other types of substance use, especially cocaine, has been found to increase the risk of infant mortality and SIDS. In 1995, birth certificate data indicated 1.5% of women of all races drink alcohol during pregnancy, and 4.3% of American Indian women drank alcohol during pregnancy (Ventura et al., 1997). However, alcohol use is known to be under-reported on birth certificate data.

## Results

In the study population, the prevalence of drinking during pregnancy, particularly binge drinking, was much higher than drinking reported on birth certificates; 57% of control mothers and 79% of case mothers reported that they drank before pregnancy. To date no studies have established an association between alcohol use during pregnancy and SIDS. However certain findings from this study suggest that there is a relationship. A higher proportion of case mothers reported drinking alcohol or binge drinking three months prior or during pregnancy compared to control mothers. Seventy nine percent of case mothers and 57% of control mothers reported drinking alcohol three months before or during pregnancy including 67% of case mothers and 28% of control mothers reported drinking alcohol in the first trimester. Seventy four percent of case mothers and 46% of control mothers reported binge drinking three months prior or during pregnancy. It is encouraging to note that the prevalence of drinking dropped dramatically in the second and third trimesters, but still 18% of case mothers were drinking. Fetal alcohol syndrome is a well-established outcome of this level of drinking during pregnancy, and now infant death, although not proven as a related outcome, should also be considered.

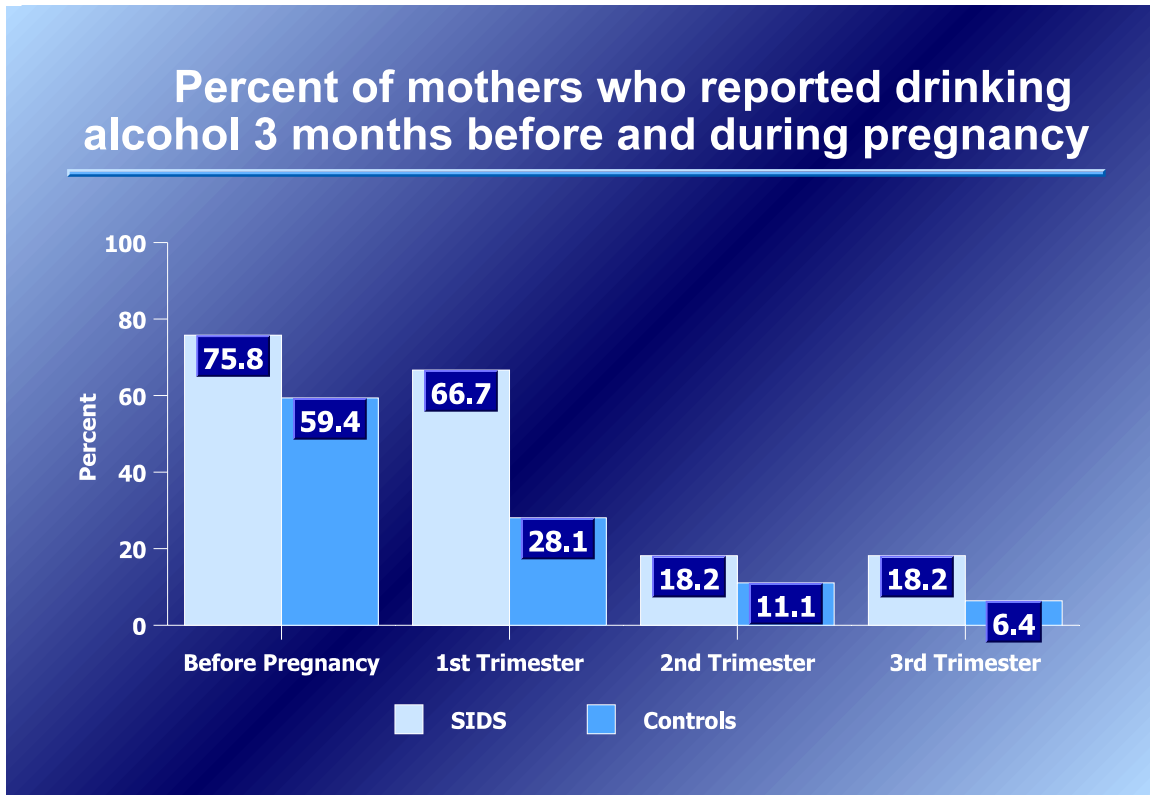
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<sup>2</sup>*Tapa Wanka Yap*: The throwing of the ball. ...a game among our people which was played with a ball, four teams and four goals which were set up at the four quarters. But there are only a few of us today who still understand why the game is sacred, or what the game originally was long ago, when it was not really a game, but one of our most important rites. ...it is the seventh and last sacred rite of this period given to us, through a vision, by *Wakan-Tanka*.

Black Elk in The Sacred Pipe.

<sup>3</sup>Drinking more than five or more drinks during one drinking session.

1. Drinking rates were high in both SIDS case and control mothers but rates in case mothers were higher than control mothers before and during pregnancy (Figure 13).
2. Drinking rates went down during pregnancy but the decrease was greater for control mothers than case mothers (Figure 13).



**Figure 13**

3. Most women who drank had five or more drinks when they drank (Figure 14). Five or more drinks per day is considered a binge.

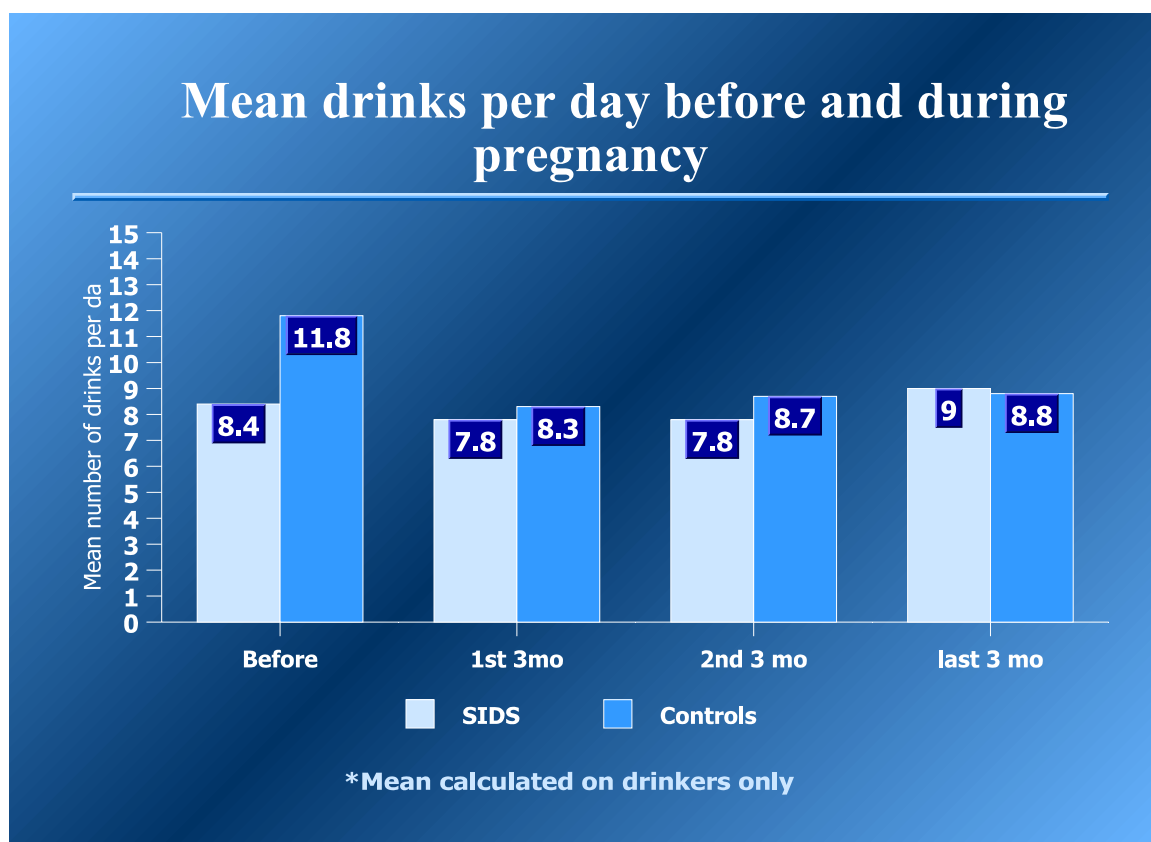


Figure 14

4. Women who drank had an average of 8 drinks on the days they drank, drank about 3 days per month, and had 2 to 3 binge drinking episodes per month (Figure 15 & Figure 16).

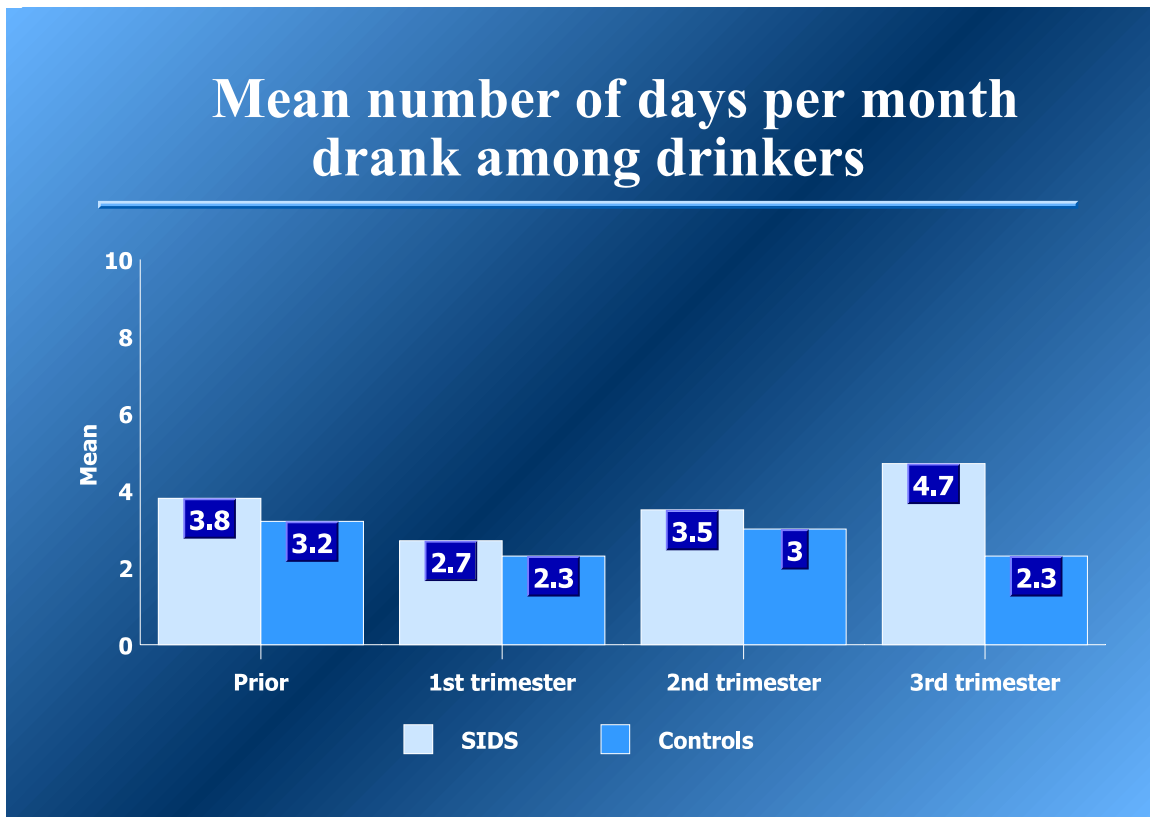


Figure 15

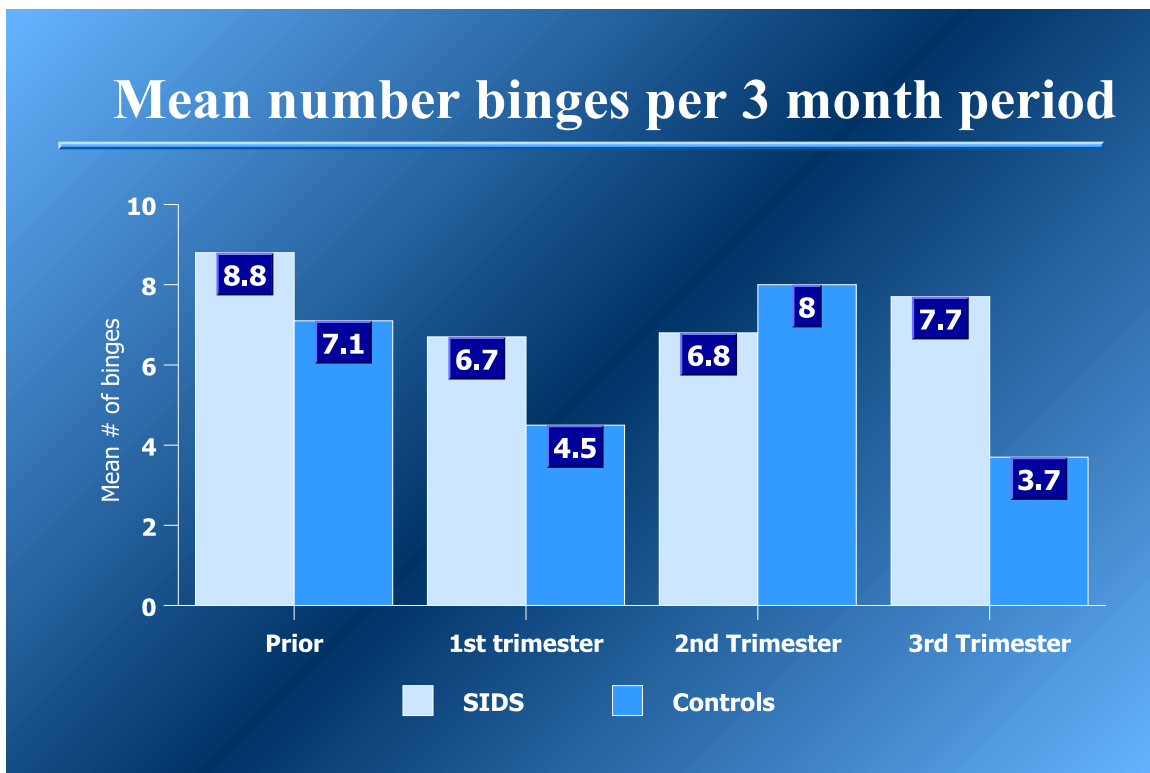
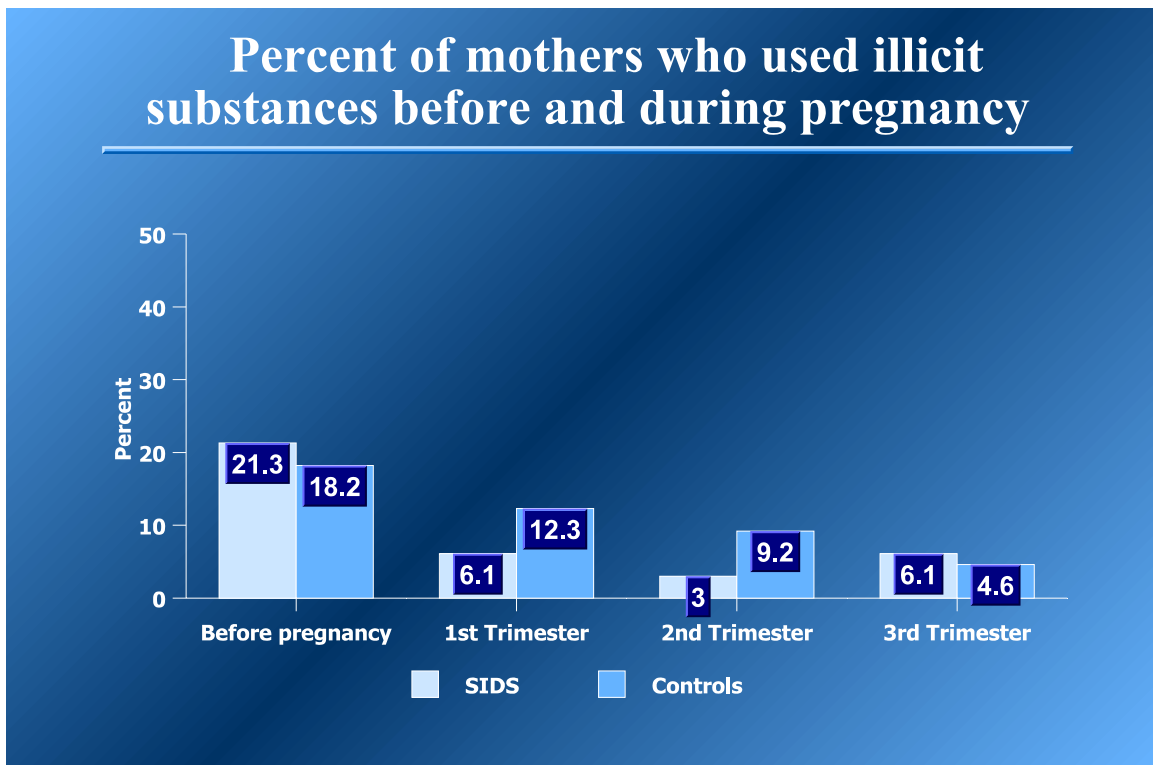


Figure 16

5. SIDS babies were more likely to have mothers who continued drinking in the first three months of pregnancy than living control babies.
6. More case mothers of infants who died from any cause binge drank in the second half of pregnancy than mothers of living control infants.
7. None of the case or control infants studied had diagnostic features of Fetal Alcohol Syndrome but they may have other adverse effects from fetal alcohol exposure.
8. The rate of illicit drug use (marijuana and cocaine) was about 20% before pregnancy and decreased during pregnancy. (Figure 17). None of the women used heroin or PCP. One used speed, one used crack, and three used cocaine. Marijuana was the most frequently used illicit drug.



## RECOMMENDATIONS

1. Prevention, educational, and treatment programs for alcohol and substance abuse should be implemented community-wide, especially in the schools.
2. Prevention, educational, and treatment programs should include strategies to address drinking **before** pregnancy and **during** pregnancy. Substance abuse education, screening, counseling and intervention should be provided to all pregnant women.
3. Effective alcohol and substance use screening questionnaires should be used on or soon after all 1<sup>st</sup> prenatal visits and, ideally, prior to pregnancy in clinics and schools. The Aberdeen Area Epidemiology Program recently validated a self-administered questionnaire can identify over 70% of women who are drinking during pregnancy. Its widespread use should be promoted as part of routine prenatal care. Quantity and frequency of alcohol and substance use should be determined at each prenatal visit for all women who use them.
4. Spouses, families, and the communities should provide nonjudgmental support to mothers to reduce or stop use of alcohol and drugs.
5. High-risk clinics should be available to monitor pregnant women who drink or use substances throughout their pregnancy.
6. At each prenatal visit, providers should counsel women who are using alcohol or other substances and help them stop. Those women who cannot or will not stop drinking or using drugs should be referred for appropriate follow up as specified in Tribal or State codes.
7. Women who cannot or will not stop drinking are candidates for voluntary or involuntary residential treatment. More facilities to care for these women and their children are urgently needed, including shelters and residential facilities for those in abusive or nonsupportive families.
8. Educational activities should be directed to ensuring that infants and children are maintained in a safe environment, and that includes not riding with a driver who has been drinking.

## Conclusions

This report, *“I will never forget my child” “Mi Činča kin towani ewaktonji kte šni”*: Results of the Aberdeen Area Infant Mortality Study, provides important information regarding Sudden Infant Death Syndrome (SIDS) and infant mortality among Northern Plains tribes in the Aberdeen Area. The tribes located within the Aberdeen Area have the highest rates of infant mortality within the Indian Health Service and among the highest in the nation. An unusually large proportion of the infant deaths occur in the post-neonatal period and many of these have been reported to be due to SIDS. This study represents the first systematic review of infant deaths post-discharge in the Aberdeen Area using standardized investigative procedures to assure uniformity of the diagnosis of cause and manner of death. It is also the first case-control study of infant deaths to examine medical, behavioral, social, and environmental risk factors among Northern Plains Indians using maternal interviews, medical records, and detailed case reviews. Many such studies have been done in other communities all over the world and have provided valuable information that has been used to reduce deaths from SIDS in these communities (Willinger, 1995). The data collected as part of the Aberdeen Area Infant Mortality Study and presented in this report help us to understand the conditions in the community which contribute to the high rate of infant death. The study determined the frequency of several modifiable risk factors for infant mortality. This information can be used to develop community-based policies and programs to reduce the risk of infant mortality and specifically deaths due to SIDS. Recommendations for parents to reduce the risk of infant death are summarized in Appendix I.

The SIDS diagnosis is given to an infant death (less than one year of age) which remains unexplained after a case investigation which includes an autopsy, review of the clinical history, and an examination of the scene of death (Willinger et al., 1991). SIDS infants have no history of prior or current severe illness and there is no evidence of life-threatening disease at autopsy. The data in this report confirm that a high proportion, 52%, of post-discharge deaths in the first year of life are due to SIDS. A comparable statistic is not available for the nation. The closest comparison to the post-discharge deaths enrolled in the study is post-neonatal death: 33% of post-neonatal deaths in the nation are SIDS deaths (Anderson et al., 1997).

The conference participants made a number of suggestions for improving the interface between the health care providers and the community and thus reducing the likelihood of poor infant outcome (Appendix II). These include: continued and expanded home visiting for pregnant women and new mothers; development and implementation of a standard IHS-wide prenatal protocol that ensures the provision of uniform medical and counseling services; establishment of tribal family planning clinics; and development of a plan to disseminate health information as efficiently and widely as possible.

The conference participants concluded that a community-wide effort to create an environment that guides and supports the pregnant woman and the family is central and necessary to eliminate drinking and smoking before and after birth. They suggested that tribal leaders adopt the well-being of children as the top priority, since children are the “sacred ones.” They should set community standards regarding drinking and smoking. It was recognized that dedicated treatment facilities for pregnant women who drink and their children need to be established as soon as possible.

The conference participants cited the community as a resource for parenting skills. It was suggested that mentoring programs be established that enlist the aid of grandparents and tribal and spiritual leaders. In addition it was recognized that the basic survival needs of a family in distress should be met first so that they can marshal the strength for parenting and behavioral change.

The results of the Aberdeen Area Infant Mortality Study serve to highlight areas of family health that could be improved. This report contains concrete recommendations to reduce the risk of infant

mortality and SIDS. It also contains suggested paths of future policy and action that may be of use to the tribal communities of the Northern Plains.

More detailed analysis of the different aspects of the study data and preparation of manuscripts for publication in peer reviewed scientific journals is currently underway. The first paper will discuss the methods of the study and the second paper will report on the key epidemiologic findings. Subsequent analysis will examine the data from all aspects of the study including the maternal interview, medical records, death scene investigation, and postmortem examinations. The databases developed during the study will continue to be a rich source of data for analysis for many more years. As the data are analyzed and reports are written, it is our hope that they are utilized to their fullest extent to improve maternal and child health.

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Both PIMR and IMS Committees: Christopher Krogh, M.D., M.P.H., MCH Consultant, AAIHS, Principal Investigator, Chair and Member; Lyle Best, M.D., MCH Consultant, AAIHS, Current Chair PIMR; Dave Brewer, Coroner for the Oglala Sioux Tribe and for Shannon County; Larry Burd, Ph.D., UND School of Medicine; Sara Dye, M.D., Chief Medical Officer, AAIHS; Solomon Iyasu, M.B.B.S., M.P.H., Medical Epidemiologist, CDC; Carolyn Lofgren, Director, Liaison Services, IHS Headquarters West; Darlene Johnson, R.N., M.S., Rosebud Hospital, served as MCH consultant for the Aberdeen Area from 1988 to 1991; Hannah Kinney, M.D., Neuropathologist, Boston Children's Hospital, Associate Professor, Harvard University; Fred Mandell, M.D., Associate Professor, Harvard University, Senior Pediatrician, Boston Children's Hospital and Director, Massachusetts SIDS Program; Mary McClain, R.N., M.S.N., Project Coordinator, Massachusetts SIDS Program; Brad Randall, M.D., forensic pathologist, Sioux Falls; Donald Habbe, M.D., forensic pathologist, Rapid City, SD; Thomas Welty, M.D., M.P.H., Medical Epidemiologist, AAIHS; Marion Willinger, Ph.D., NICHD; Harry Wilson, M.D., M.P.H., University of Texas, El Paso; Gloria Randall, P.A., Lower Brule Health Clinic; Jack Estes, Coroner, Lower Brule Tribe; Pam McCloud, R.N., Turtle Mountain Comprehensive Care Facility; Leslie Randall, R.N., M.P.H., Co-Principal Investigator, Project Director, Co-Chair PIMR, Chair IMS; Dana Bender, R.N., B.S.N., Research Nurse Interviewer, IMS Staff.

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Previous IMS Committee members:

Mary Wright, Tribal Chair for Rapid City Indian Health Board; Donna Vandall, Executive Director of the Aberdeen Area Tribal Chairmen's Health Board; Cecelia Kitto, M.D., Chief Medical Officer, AAIHS; Gene Gerber, D.D.S., M.P.H., IHS/CDC Liaison; Dianne Kastner, Executive Director, AATCHB; Sharon Vogel, Director, Northern Plains Healthy Start, AATCHB.

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## Appendix I

## Reduction of Infant Mortality

### Recommendations for Parents

#### BEFORE PREGNANCY:

1. Use family planning to prevent unplanned pregnancies
2. Stop alcohol, tobacco and illegal drug use completely BEFORE and DURING pregnancy.
3. Take folic acid prior to pregnancy to prevent neural tube defects.
4. Take parenting classes or read books about how to be good parents.

#### DURING PREGNANCY:

5. Maintain smoke-free environments for pregnant women, infants and children.
6. Obtain prenatal care as soon as pregnancy is a possibility and make regular prenatal visits as recommended by the prenatal care provider.
7. Eat healthy foods such as fruits, vegetables, cereals, milk products and bread.
8. Take vitamins and iron every day as directed by your prenatal care provider.

#### AFTER BABY IS BORN:

9. Breast feed babies for 12 months if possible.
10. Take the baby to the clinic or doctor's office for regular well child care and immunizations.
11. Buckle infants and children properly in car seats ALWAYS.
12. Place infants to sleep on back.
13. Stop domestic violence, child abuse and neglect.
14. Take infants with fever to a health care facility for evaluation and treatment.
15. Use smoke detectors in all homes.
16. Avoid overheating baby by too much clothing or too many blankets.
17. Don't take your children in vehicles where the driver has been drinking.
18. Make certain that infant caretakers do not abuse alcohol or drugs.

## Appendix II

## Summary Recommendations from IMS/FAS Conference

1. How will the data get to people and what will happen to the information?
  - A. Information needs to be presented to the following:
    1. Tribal Councils
    2. Spiritual Leaders
    3. Aberdeen Area Tribal Chairmens' Health Board
    4. Elders
    5. Schools
    6. Communities
    7. Families
  - B. Issues that need to be addressed:
    1. Ways to prioritize infant mortality with the Tribal Councils
    2. Ways to set up SIDS support groups
      - a. Suggest that mothers get invited to get together
      - b. Suggest that 'messenger' be someone who has experienced a SIDS death
      - c. Health professionals need to work on their own grief issues first
      - d. One of the rites of the Oglala is "Making of relatives"; use this as a way to support the families
  - C. Information needs to be utilized by the community and ways to do this are:
    1. Build a network and use resources to address ways to prevent/reduce the risk of SIDS
    2. Design programs to empower people to make change
    3. Implement talking circles, sharing of thoughts, feelings, and information
    4. Involve Spiritual Leaders in the process
    5. Use mentoring programs to get the message out:
      - a. Utilize grandmothers, analyze their style: their style is gentler, presentation is different
      - b. Use a foster grandparent program
      - c. Utilize grandparents as mentors for teen groups
      - d. Utilize grandparents in home visits when health professionals are unable to go on the home visit
  - D. Parenting needs to be addressed and ways to do this are:
    1. Use the "Back to Sleep" message to ensure babies are put on their backs to sleep
    2. Meet the maintenance needs of the parents through:
      - a. Welfare reform, both state and tribal; should be looked at because of its impact on children
      - b. Reinforce the need for parental/family support
      - c. Provide support to the parent/family
      - d. Address the need to place unplanned/unwanted children
      - e. Find ways to involve the parent through classes, videos, home

- visits, support and advocacy
- f. Set up for emergency response, have a way to mediate admission into treatment centers

2. How does prevention get addressed?

- A. Tiospaye concept
  - 1. Stress that the community is a whole
  - 2. Establish Elder Councils to support healthy life styles
  - 3. There is a need to strengthen the community, go back to cultural ways/values, “Walk in Balance”
- B. Educational materials need to be culturally appropriate
  - 1. Utilize the radio stations
  - 2. What are the knowledge deficits?
  - 3. Start in the grade school with the educational efforts
  - 4. Utilize the children through:
    - a. Drama/plays
    - b. Web site designed by children
    - c. Incorporate into the curriculum through computer classes
    - d. Children are often effective as educators for parents and can get them to stop smoking, drinking when no one else can
  - 5. Provide health education via Public Service Announcements
- C. Address the needs of the male
  - 1. Create educational groups targeting men
  - 2. Make an extra effort to invite men to groups
  - 3. Create special programs just for men
  - 4. Provide incentives for male programs
  - 5. Include men in the home visits
  - 6. Get men involved in the prenatal visits
- D. Community interventions need to be coordinated with all agencies
  - a. Get information out to all agencies so they coordinate training efforts
  - b. There needs to be interagency internetting such as “Babies in Utero in Distress”
- E. Action plan should address needs of the pregnant woman
  - 1. Ensure standardized protocol for prenatal care throughout IHS
    - a. Inform temporary doctors of protocol
    - b. Have a system in place to ensure adherence to protocols
    - c. Give vitamins and folic acid at a positive HCG instead of waiting for the first prenatal visit which may not be for a few weeks
  - 2. Implement usage of the Self Administered Questionnaire (SAQ) for alcohol consumption throughout IHS
  - 3. Effective case management for pregnant women especially those at high risk
  - 4. Utilize home visits throughout the pregnancy and first months of life
  - 5. Develop a standardized prenatal education packet to be given out for each pregnant woman

6. Give a prescription for “Healthy Living Environment for the Pregnant Woman” at first prenatal visit
7. Involve Head Start in screening process
8. Establish treatment centers for pregnant women and their children
9. Revive traditions to celebrate pregnancies
10. Bring back the “Welcoming of the Spirit” ceremony
11. Address the issue of mother’s mental health before, during and after pregnancy
- F. Address the issue of teen pregnancy
  1. Make family planning available for teenagers
  2. Create special ordinances for providing contraceptives to American Indian teenagers. IHS regulations prohibit distribution of contraceptives to children under the age of 18
  3. Maybe have a family planning center separate from IHS e.g. Flowering Tree at Pine Ridge
  4. Establish a facility for pregnant teens to go to for treatment
  5. Use of “Babies and You” program before pregnancy
- G. Remember the child is sacred and address the needs of the children
  1. Stress positive parenting through the use of the radio, newspaper etc.
  2. Take care of the child, pregnant woman
  3. Give a prescription for “Healthy Living Environment for the Child” at time of birth e.g. no second hand smoke, no alcohol use around child
4. Police officers/Coroners
  - A. Educate law enforcement regarding SIDS, grief, death and sensitivity training
    1. Use of sensitivity training for those instances where the family is put in jail because of death of an infant
  - B. Enable law enforcement of current legislature regarding drinking and pregnancy
  - C. Educate the tribes on the need for Tribal ordinances covering Tribal Coroners and the Sovereignty issues
    1. Tribal ordinance assumes jurisdiction from the state and gives it to the tribe
    2. Tribal ordinance to authorize the coroner to order autopsies on all deaths within the reservation
      - a. This puts the responsibility with the coroner and not with the family and helps relieve some of the guilt
      - b. An autopsy provides answers/information to the family/parents
  - D. Develop MOA with surrounding towns for tribes to investigate American Indian deaths in their communities with Tribal Coroners retaining jurisdiction
  - E. Get funding to pay for autopsies
  - F. Have a Tribal Coroners Association, locally and nationally